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— We have received the following from a distinguished correspondent:

ALBANY, MAY 14, 1881.

Gentlemen:—I have received the notice extracted from AM. NATURALIST, in reference to an invitation to the British Association for the Advancement of Science to meet in America in 1883.

I approve of the invitation, which it will be necessary to repeat before its acceptance.

It is well to begin the invitation in order that we may approach the object which sooner or later I believe will be accomplished.

Very truly yours,

JAMES HALL.

—:O:—

RECENT LITERATURE.

SEMPER'S ANIMAL LIFE AS AFFECTED BY THE NATURAL CONDITIONS OF EXISTENCE.¹—The author's aim in preparing the lectures which he originally delivered before the Lowell Institute, at Boston, and which are here presented to the reading public, is expressed in the following words, to be found in the preface: "It appears to me that of all the properties of the animal organism, variability is that which may first and most easily be traced by exact investigation to its efficient causes; and, as it is beyond a doubt the subject around which at the present moment the strife of opinions is most violent, it is that which will be most likely to repay the trouble of closer research." Professor Semper, therefore, endeavors, and we think with a good degree of success, to present a general view of those facts and hypotheses which bear upon the subject, and which are either of universal significance or, from his own point of view, appear to offer favorable subjects for experimental treatment. The work is not an attempt at a general argument for the evolution hypotheses. If it was, a great many more views and facts might have been presented, but the value of the book is that it is mainly an original contribution to the general subject of evolution from the point of view of experiments on the relations between animals and their environment, which may be largely made in the laboratory, as well as in the field. The subject of endeavoring to account for the *origin* of the variations of species, of seeking for the efficient causes of variability, is not unfamiliar to American naturalists. Darwin professedly starts from the tendency to variation, and his theory, as such, ignores or opposes any thing like Lamarckianism or the influence of the environment on the organism. A few American writers have felt that we must endeavor to seek the causes inducing the tendency to variation, and have thus been led to what we may call a modified, scientific form of Lamarckianism. In order that the organism may undergo change

¹*The International Scientific Series.* Animal Life as Affected by the Natural Conditions of Existence. By KARL SEMPER, Professor of the University of Würzburg. With two maps and 106 wood cuts. 12mo, pp. 472.

it must first be acted upon by a change in its surroundings, and the change must then be transmitted to its descendants. This is (1) modern Lamarckianism. Then, when the organism or set of organic forms are really in a stage of inequilibrium or of change, the principle or forces of (2) natural selection, or Darwinism, come in, eliminating the useless and preserving the useful forms. Thus Lamarckianism, in its modern shape, forms the base of the pyramid of evolution and Darwinism the apex. Lamarck and his followers (whether conscious of their intellectual descent from the learned and philosophic Frenchman or not) are endeavoring to lay the foundation. Meanwhile, Darwin and his English and German collaborators have begun at the top and worked downward. While Professor Semper does not mention Lamarck, his entire line of thought is that of a modern Lamarckian, or what Lamarck would probably have been had he lived in the present half century. The work before us is not metaphysical, as is Darwinism. The term "natural selection" is seldom, if ever, completely personified as an efficient cause or active law, but we are, on the contrary, treated to the results, so manifold, of the effects upon animals of changed conditions of life by changes wrought artificially or in the laboratory of nature. The author, instead of taking up example after example, as do Darwin and especially his followers, and endeavoring to explain their variation by hypothesis piled on hypothesis, like the pile of metaphysical truths of old-school metaphysicians, which may be deftly demolished by removing the premise or undermost brick—the author, we say, works on the inductive method, and endeavors at least to plant his first brick on a substratum of facts tested by experiment. As Semper remarks at the end of his book, "No power which is able to act only as a selective and not as a transforming influence can ever be exclusively put forward as the proper efficient cause—*causa efficiens*—of any phenomenon. In all cases, including those of mimicry, the point finally must be to investigate the causes which may have availed to produce by their direct action any advantageous and protective change of coloring. It was not until the change had actually taken place that selection between better or worse endowed individuals could lead to the further development of the advantageous character. * * It becomes imperative that we should, in the first place, carry out the most exact research possible by means of experiment, and also wean ourselves of the convenient—but, as it seems to me, highly pernicious—habit of theoretical explanations from general propositions. Otherwise, there is great danger that the bright expectations which Darwin has opened out to us by his theory may be baffled—the prospect of gradually bringing even Organic Being within reach of that method of inquiry which seeks to discern mechanical efficient cause."

How the author has carried out his intentions may be seen by a perusal of the chapters which treat of food and its influence, the

influence upon animals of light, of temperature, the influence of stagnant water, of a still atmosphere, of water in motion, or currents, as a means of extending or hindering the distribution of species, and, lastly, on the transforming influence of living organisms on animals, and the selective influence of living organisms on animals. Unless we are mistaken, the method of studying the causes of evolution, *i. e.* by observation and experiment, will be in the end far more sound and fruitful than those of pure, metaphysical Darwinism, as it tends to become in the hands of ultra Darwinians. The methods are more like those of the physical and mathematical astronomer. Zoölogy will, in consequence be more of an exact science and possess more real interest and value in the eyes of the masses than it now does.

The chapters on the influence of light and of temperature are particularly suggestive. So is the fifth chapter, on the influence of stagnant water, which embraces the results of the experiments of Schmankewitsch on the brine shrimp; also those of Semper on the effect of changes in the volume of water on the pond snail. The portion which is quite novel, and which will attract general attention, is Semper's theory of the origin of coral islands. He attempts to show that the connection between the strength and direction of ocean currents, and the vigor of growth in the corals and in the reefs they form, is one of the principal causes that have given the reefs their frequently very remarkable forms. This view is, he claims, in direct contradiction to Darwin's theory of subsidence, as well as Dana's theory. It is more of a piece with Moseley's theory recently proposed, although it is not impossible that Darwin's, as well as Dana's, on the one hand and Moseley's and Semper's on the other, may all be the terms of a series of causes.

The book teems with facts which will be new to most of our readers, and hence it is a solid contribution to the evolution theory. Compared with Oscar Schmidt's crude and one-sided presentation of Darwinism, in his little book entitled *Descent and Darwinism*, Semper's will remain a classical work, from its basis of well-grounded facts.

Without careful search for errors we notice that under the head of hybridism several cases known in the United States among the deer and Salmonidæ are not referred to (perhaps they were not accessible to the author), while the statement that several species of insects produce hybrid offspring may, if we mistake not, be modified, since about one hundred such cases are on record. The singular Branchipod genus *Thamnocephalus* cannot be said to occur in the "South of the Union," for its only known habitat is Kansas, on the eastern edge of the Rocky Mountain plateau. We notice a few typographical errors, and the index is too short and quite defective.

ANNIVERSARY MEMOIRS OF THE BOSTON SOCIETY OF NATURAL HISTORY.—Following the example of German scientific societies,